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Our Illustration.

Some time ago Mr. H. W. Nash, of Pueblo, Colorado, sent us a fine photograph of *Sphinx drupiferarum* from life. It is shown feeding on plum. We have reproduced it for the benefit of our readers.

"The full grown larva is about 3½ inches long, and of a bright apple-green color. The head has a vertical dark brown or black stripe on each side, and there are seven oblique white stripes on each side of the body, which are bordered on the upper side with bright purple or mauve. The spiracles are of a bright orange color. The caudal horn is dark brown, with yellow at the base of the sides."—(FERNALD.)

A Tigar Hunt in the Far West.

BY G. WESLEY BROWNING.

Salt Lake City, Utah.

Present indications (March 18th) seem to promise that 1900 will be a Cicindela year in Salt Lake Valley. The beginning of the collector's season dawns with a solid month of weather too uniformly delightful by far to be characteristic of early

spring. I survey the phenomenon from my door-step. There are robins carroling in the trees, and there are butterflies in the air: *Vanessa antiopa* and *V. milbertii* are flitting about, together with a few *Grapta zephyrus* and fewer *Pieris rapæ*. These are too common to be tempting, but at this time of the year they are germs that awaken the collecting fever from its winter lethargy. Collecting net is unfolded and examined,—there are a few slight souvenirs of last year's thorns and twigs, not large enough, however, to form an "open door policy." Cyanide bottle is uncorked,—the fumes are still potent enough to disconcert most anything of a hexapodal nature.

'Tis but a half hour's walk to the river Jordan. *Cicindela vulgaris* is there, running everywhere over the moist sand. About twenty of them are captured. They show considerable variation in size, coloration and markings. But we get tired of taking nothing but *vulgaris*, and move on.

Across the river is plenty of open field of dry clayey soil, covered here and there with last year's growth of crisped salt grass, and dotted here and there with an occasional stagnant pond. Here we find a few *Calosoma zimmermanni* and *Eleodes hispilabris*. As we near one of the ponds a sudden buzz and a streak of bright metallic green marks the transit of *Cicindela graminea*. We note the termination of the green streak and creep forward. It is easy to discern a shining emerald against a dull background of clay and yellowed grass, and we soon place seven of these emeralds to our credit.

But the streak that vanishes before us is not always a green one: occasionally it is dark indigo, and leads to the capture of *C. audubonii*. At this point we remove all other specimens from our cyanide bottle, for *audubonii* is large and powerful,—much larger here, I am told, than the same species farther east,—and if placed in the bottle along with other specimens he usually divests some of them of their antennæ and legs, if not worse, before yielding to the opiate.

An interesting fact is here noted: we find in two instances the ♂ of *C. graminea* mating with the ♀ of *C. audubonii*, and in both cases both insects are netted while paired. I have not before known of intermarriages among separate species of

Cicindela, but would not be surprised to find them recorded by others.*

A fly by the name of *Gonia frontosa* is buzzing over nearly every square yard of the ground about us, and this is what the tigers are looking for. We find several of these flies just emerging from the cracks in the dry ground,—soft, palid and with wings yet folded. Little chance do these semi-pupal semi-imaginal things stand against Cicindelian rapacity, save in the quick transition to a more shifty and more atmospheric existence.

We now look longingly over the twelve miles of level barren plain between us and the shores of Great Salt Lake, where the handsome *Cicindela senilis* is said to disport itself about this time of the year, but with a beetle at twelve miles and a dinner at two the choice is with the latter.

The same afternoon a number of these specimens were packed in cotton and mailed to a friend in the East. A few days later a letter was received saying that one of the *Cicindela audubonii*, while in Uncle Sam's mail bags, had behaved in a manner most unbecoming to a supposedly dead beetle, for he had chewed his companion specimen to pieces, and had broken off his own legs in the attempt to escape confinement. I am now at work recharging my cyanide bottle.

Description of Larvae of Azelina Peplaria Hubn.

By A. N. CAUDELL, Washington, D. C.

—Length 35 mm. Head 2.5 mm. wide, strongly bilobed, the lobes light ash-colored above and obtusely angled. Inner anterior borders of the lobes darker, almost fuscous. Face lighter, especially the lowe, half of the triangular clypeus. General color of the body brownishr mottled with longitudinal splashes of a lighter shade. Tubercles black, minute. Hairs microscopic, black. Thoracic legs on outer side concolorous with the body; on the inner surface lighter. Abdominal legs colored same as the body on the outer surface, but black on the inner sides, and the venter between the anal pair is also black, bordered posteriorly with white. There is an irregular, not prominent, transverse ridge on the twelfth segment.

This larva was fed on wild cherry. It entered the soil on July 10 and the moth issued in August.

* *Graminea* and *audubonii* are not species but color varieties of *purpurea*.—Eds.

Identity of Hemaris tenuis Grt. and Hemaris diffinis Bdv.

By ELLISON A. SMYTH, JR., A. M.,
Virginia Polytechnic Institute, Blacksburg, Va.*

The existence of seasonal dimorphism in many species of butterflies and moths has been so well established that it will excite no great comment to announce the completion of experiments in breeding, whereby the fact has been established by me that *Hemaris tenuis* Grt. and *Hemaris diffinis* Bdv. are seasonal forms of one species, their relation being the same as that already proven in the allied and distinct species *Hemaris ruficaudis* and *thysbe*.

Tenuis is the spring form from wintering pupæ and *diffinis* the mid-summer form from eggs of *tenuis*.

On September 9th, 1896, I obtained two sphingid larvæ from *Triosteum perfoliatum*, one of the Caprifoliaceœ. One of these died in the pupa during the winter; the other disclosed, on March 19th, 1897, an *Hemaris* with white-yellow patagiæ, light greenish-yellow thorax, black upper abdomen, last abdominal segments and center of anal tuft white-yellow, sides of anal tuft black and an even inner border to outer margin of fore wings; vitreous spaces covered with scales which mostly fell off on handling the moth. This was identified as *Hemaris tenuis* Grt. Later in the spring I obtained from the *Triosteum* a number of larvæ similar to those found in the fall. They pupated, and in July a number of imagines were disclosed which were identical with specimens of *Hemaris diffinis* Bdv. in my collection from the North. I paid no attention to the matter, and in late August, 1898, again obtained from the same patch of *Triosteum* a number of larvæ exactly like the others. These pupated and wintered, and in the following April and May they all disclosed the whitish-yellow, even-margined *tenuis*. This time I could not help seeing the fact so clearly indicated that *tenuis* and *diffinis* were seasonal forms of one thing, as was the case with *Ruficaudis* (*uniformis*) and *thysbe*. In June, 1899, I therefore gathered all of the

* The plate has been omitted by consent of the author. It was found that a half-tone plate would not sufficiently show the minute differences to which the author alludes.—ED.

larvæ and eggs that I could find on *Triosteum* and transplanted to my garden a lot of the plant. Some of these larvæ pupated by the 17th of June, attaching together leaves and debris on the surface of the ground, the pupa being enclosed in a loose cocoon of purplish brown silk ; the others all spun up by the 24th, and between July 5th and 18th. All emerged ; most of them were the typical serrate-inner-marginal *Hemaris diffinis*, two or three had the whitish-yellow coloring of *tenuis*, but the wings of *diffinis*, and one was the form *æthra*. I had taken these pupæ South with me, and so was forced to kill the imagines, as I had no chance to tie out a female, but on my return to Virginia I visited a patch of *Triosteum*, and after some search found a female *H. diffinis* flying in and among the plants, ovipositing. I gathered what eggs I saw her lay and then captured her, getting altogether about forty eggs. This was on August 1st, '99. This female is in every way a typical *H. diffinis*, and is Fig. 1 in the accompanying plate.

I kept these eggs carefully to themselves. The larvæ differed in no particular from any of the other larvæ I had before obtained from the *Triosteum*. By August 27th all had pupated. I kept these pupæ in the same breeding cage, all to themselves, marking the case " Pupæ from Eggs of *diffinis*," so as to avoid any mistake. On May 17th, 1900, the imagines commenced to emerge, and most of them I succeeded in killing before they had a chance to flutter, thus preserving the smoky appearance due to the covering of scales on the vitreous spaces. All were typical *H. tenuis*, those that were scale-covered being Strecker's *fumosa*. It was interesting to notice how quickly the wings became clear if the moth fluttered. One buzz, and presto ! *H. fumosa* became *tenuis*, with the clear vitreous spaces. In the plate Figs. 2 to 8 inclusive are specimens selected from this brood, from eggs of *diffinis*.

I selected two females, each being as true *tenuis* as I could find in the brood, and tied them out. From one I had no results, but from the other I obtained sixty odd eggs from which I obtained fifty-nine larvæ. Descriptions of eggs and larval change are appended to this article. These eggs were laid on June 1st and commenced hatching on the 6th ; the moults were

on June 9th, 13th, 16th and 20th, and by the 25th pupation was well under way. On July 12th three imagines appeared, and by the 20th over thirty had emerged. All were *diffinis* save a few *æthra* and Figs. 9 to 18 inclusive, in the plate, are from this brood, from eggs of *tenuis*. A number died in pupa and the balance at this writing (September 13th) seem inclined to winter. Whether they will emerge in the spring as *tenuis* or *diffinis* remains to be seen.

It is impossible for a photograph to present the gradations in color which are shown by the specimens represented in the plate. A few words of description will therefore be necessary.

Fig. 1 is the original *diffinis*, ♀, caught August 1, 1899. From her eggs were obtained which in May following produced *tenuis*, Figs. 2 to 8 inclusive being selected from this brood.

Figs. 2 and 3.—*Tenuis*, killed before wings were fluttered; these are Strecker's *fumosa;* they show the even inner margin of fore wings, and the colors are light lemon-yellow and black; the sides of abdomen show blue spots.

Figs. 4 and 5.—*Tenuis*; wings clear through loss of scales by fluttering. No. 4 shows thick outer border and No. 5 a very narrow one; both even on inner edge of outer border of fore wings and colors white-yellow and black.

Figs. 6 and 7.—*Tenuis;* body colored, as in *tenuis*, but inner margin of fore wings beginning to show indentations.

Fig. 8.—Body colors deeper yellow and inner margin serrate; an approach to *diffinis*.

All of the above of same brood, from eggs of *diffinis*, laid Aug. 1, '99; flies emerged May 15th to 30th, 1900.

Figs. 9, through 18, all from eggs from a *tenuis* ♀ of the above brood.

Fig. 9. *Diffinis;* thorax and patagiæ and end of abdomen deep buff yellow and greenish; upper part of abdomen rust brown; inner edge of outer border of fore wings distinctly serrate.

Fig. 10.—*Diffinis*. Outer border broad.

Fig. 11.—*Æthra*. Abdomen lacking dark color on upper portion, being colored like thorax; apical spot of fore wings very red, veins of wings red, especially beneath; inner margin hind wings carmine. Killed before fluttering; hence smoky wings.

Fig. 12. *Æthra*, as above; wings clear; killed after wings were shaken.

Fig. 13.—*Diffinis;* very dark; scarcely any yellow on the brown red abdomen; opposite extreme to *æthra;* wings barely indented.

Fig. 14.—*Diffinis* as to color of body, *æthra* as to red veins and wing borders.

Fig. 15.—*Æthra* as to yellow abdomen, veins and wings dark, as in *diffinis*.

Figs. 16 and 17.—Serrations of inner edge of outer border of fore wings approaching *axillaris* in depth. Apex of forewings of No. 17 a little worn by fluttering in cage.

Fig. 18.—*Diffinis* or *tenuis?* Wings barely indented, body colors, as in *tenuis*.

These last 9, all from same brood, eggs laid by *tenuis* ♀ on June 1, 1900, the mother herself being from an egg laid by *diffinis* on Aug. 1, 1899.

Thus, eggs laid in captivity by a *diffinis* ♀ in August disclosed *tenuis* the following May, and from eggs laid by a *tenuis* ♀ of this brood, in June, *diffinis* in various varietal forms, as well as typical, were disclosed the same summer in July. Although my former experiments gave the same results, they were made with eggs and larvæ taken at liberty, and therefore of uncertain parentage, but these last two broods were from eggs laid in captivity by *diffinis* and *tenuis* respectively. I therefore feel justified in asserting that the proof is unquestionable that *Hemaris tenuis* and *diffinis* are the same species, *tenuis* being the early spring form and *diffinis* the later summer form, as is the case with *ruficaudis* and *thysbe*. I have no doubt that *axillaris* is also only a form of *diffinis*, as Figs. 16 and 17 show an approach to the deep indentations of that species. As to the identity of *tenuis* and *diffinis*, Dr. Harrison Dyar writes me: "Should you find it convenient to state in your article that I had arrived at the same conclusions as yourself, from an independent study of the mature insects, you are at liberty to do so."

The species will now, therefore, stand:

Hemaris diffinis Bdv. Summer form.
aber. *æthra* Stkr.
a. *tenuis* Grt. Spring form from wintering pupæ.
b. *axillaris* G. and R.

And very likely others, as *brucei*, *gracilis*, *thetis*, etc., will fall in as only forms of *diffinis*.

EGG AND LARVAL STAGES OF HEMARIS DIFFINIS VAR. TENUIS.

Eggs laid in captivity by *Hemaris tenuis* June 1st, 1900: egg 1¼ millimeters long by ⅘ mm. wide, slightly flattened

on top, rounded beneath ; color emerald green ; in many, golden green, translucent. Commenced hatching June 6th after 7 P. M. Freshly hatched larvæ ⅛ inch long, caudal horn fully 1-16 inch. Color pale yellowish white, no markings of any kind, sparingly clothed with tufts of hair, about two hairs to a tuft, radiating from small tubercles. Caudal horn black, nearly erect, with a slight backward curve at tip ; jaws faint brown ; all legs colored like body. Stigmata evident under pocket lens, but uncolored ; ventral surface concolorous with sides.

1st moult.—Evening of June 9th ; color a clear pea green, more glaucus above. Under surface pale purplish brown. First segment with a collar of raised yellow tubercles behind head dorsally. Stigmata dark purplish brown ; caudal horn black. Depth and extent of ventral dark color, very variable. About 3-10 inches long, caudal horn 1-15 inch ; two black spots on face and jaws ; true legs black ; head yellow green, body smooth.

2nd moult.—June 13th, 7 A. M. Length 9-20 inch ; by 4 P. M. length increased to 11-20. A central dorsal line ; half way between this and stigmata on each side a lateral longitudinal line, the two latter lines separating the glaucus dorsal region from the yellow-green lateral and lower parts. Purple brown of under parts deep and sharply separated from green of sides, not extending above prolegs. Stigmata black, faintly outlined with glaucus ; yellow punctuated collar behind head very prominent. Head yellow-green, finely punctuated, as are also first three segments. Caudal horn yellow at base on sides, rest black, spiny ; occasionally recurved forward, usually straight and pointing acutely to rear.

3d moult.—June 16th, morning. Length ¼ inch. Caudal horn $\frac{3}{20}$ inch. Colors much as before, more decided. Dorsal and lateral lines more pronounced, the latter, as before, separating the light glaucus dorsum from the yellow-green sides ; whole body granulated with whitish-green punctulations ; caudal horn recurved at tip. Just before 4th moult 1⅛ inches long ; glaucus of back more restricted and yellow-green of sides extending up higher, the two sharply separated on each side by a lateral dark blue line bordered below by light yellow, coming

together on dorsum at base of caudal horn. Granulations of whole body very distinct. Stigmata bordered by glaucus: under lense each stigma, save first, shows a central whitish space.

4th moult.—June 20th, noon. Length $1\frac{9}{10}$ inches long; head bluish green. Viewed dorsally glaucus whitish above; a central and two lateral bluish lines; below each of latter a yellowish white line separating glaucus of dorsum from green-yellow of sides; dorsum wtth fine white-green granulations; under surface wine color from rear to beginning of 5th segment, rest of central surface brown-purple. Dorsal horn black, yellow at base of sides, covered with shining black spinules. A yellow granulated dorsal collar on first segment behind head. Stigmata encircled with greenish white; black, deepest in center (opening).

June 24th.—Discoloration prior to pupation beginning to show; larvæ now $1\frac{9}{10}$ inches long. Colors as last described. The pupal discoloration, starting at 3 P. M., began by a gradual dimming of the colors and a widening of the dorsal stripe, which becomes a dirty olive; this color gradually spreads over the whole dorsal field; by 9 P. M. the discoloration was complete and the dorsal space was wine-colored; this larvæ then began to hunt for a place to pupate. By June 25th, 7 P. M., each in this cage had spun a loose brown-purple web enclosing the larva and attached to leaves, gravel, etc., in the bottom of the cage; a few spun among the leaves of the food plant; none entered the earth. June 29th, pupation complete.

The above descriptions apply to eight larvæ, separated from the rest and kept on my study table in a glass-covered box; the rest were in a regulation breeding cage out on the piazza, subject to the cool nights, and were a week behind in pupation. This seemed to make no difference in the imagines, the eight indoor ones giving seven *diffinis* and one *æthra*, and those outside being various in their forms, mostly true *diffinis* and one or two *æthra*. These commenced to emerge on July 12, continuing up to the 20th, and I have about fifteen pupa, yet alive and healthy, and which will probably winter. I have never found them on any plant but *Triosteum perfoliatum*.

The European Pear Scale.

DIASPIS PIRICOLA (Del Guercio) Saccardo, 1895.

By C. L. Marlatt, Washington, D. C.

Under the title *Chermes pyri*, Linnæus in his *Systema Naturæ* (1758) named an insect which now falls in the Psyllidæ.

More than a hundred years later Boisduval (Ent. Hort., 1867, p. 315), under the supposition that he was dealing with the Linnean insect mentioned, described as *Chermes pyri* a true coccid belonging to the genus *Diaspis*. It was a case of misidentification on the part of Boisduval, but, nevertheless, a valid characterization was given to a species not before described.

The next reference to this insect is another misidentification exactly similar to the last. Signoret (Essai, 1869, p. 439) described and figured this *Diaspis* from specimens found in France, referring it, however, to *Aspidiotus ostreæformis* described a long time before by Curtis (Gard. Chron., 1843, p. 805). Curtis' insect is an entirely distinct species and a true *Aspidiotus*, and Signoret's belief that this *Diaspis* was the same as the *Aspidiotus* of Curtis was based largely on the fact of the identity in food plant, certainly most unsafe ground, and resulting in the same error which similar action on the part of Boisduval had caused a century before.

On the same faulty reasoning, namely, identity of food plant, Signoret also assigns (l. c., p. 441) the *Aspidiotus furfurus* Fitch (1856) to the same insect.

Later also in the same monograph (1876, p. 664) Signoret makes a similar error when he designates *Aspidiotus circularis* Fitch (1856) as another synonym of *ostreæformis* Curtis as he denominates his *Diaspis*. Neither *Aspidiotus ostreæformis* Curtis, a European scale insect recently introduced into America, nor *Chionaspis furfurus* (Fitch), the common scurfy bark-louse, nor *Aspidiotus circularis* Fitch, which with little doubt is an early name for *Aspidiotus ancylus* Putnam, have any connection with Signoret's *Diaspis*, which he himself points out is the same as Boisduval's *pyri* (see Essai, 1869, p. 438).

The confusion started by Signoret between those various

species of scale insects continued for some time. Comstock in his Department Report (1880, p. 311) confuses the two species *Aspidiotus* described respectively by Curtis and Fitch with this *Diaspis*, which, however, he correctly describes and figures from authentic specimens received from Signoret. Riley in 1881 (Index to Missouri Reports, p. 69) confounds *Aspidiotus harrisi* (Walsh) (=*furfurus* Fitch) with this *Diaspis*, which he credits, following Signoret, to Curtis; and Lichtenstein in the same year (Bull. Ent. Soc. Fr., p. 52) makes the same confusion of Curtis' and Signoret's (or rather Boisduval's) insects, and redescribes the former as *Aspidiotus pyri*.

Again in his Cornell Report (1883, p. 94) Comstock repeats the error indicated in his earlier work, but adds the very interesting fact of the discovery by Matthew Cook of this *Diaspis* on pear trees at Sacramento, making the first record of its appearance in America.

Gœthe writing in 1884 (Jahrbuch Nass. Ver., etc., p. 114, figs. 1–5), gives an illustrated account of this insect, probably mixing it up, however, with Curtis' *Aspidiotus*, which he may have found associated with it.

The first indication of the fact of the distinctness of Curtis' insect from Signoret's or Boisduval's is given by Douglas (Ent. Mo. Mag., 1887, p. 239), who shows that the two species belong to different genera, and quotes a letter from Comstock confirming this fact. The status of these two species as indicated by Douglas was later further confirmed by Morgan (*op. cit.* 1889, p. 350).

Neither of these last, however, in the articles cited, seemed to have recalled the earlier name given by Boisduval, and mentioned by Signoret, although they removed the confusion hitherto existing between the *Diaspis* and the *Aspidiotus*. The question of nomenclature was solved by designating the former as *Diaspis ostreæformis* Signoret, and the latter as *Aspidiotus ostreæformis* Curtis.

Later Morgan (Ent. Mo. Mag., 1890, p. 42) discusses the bibliography of this species and concludes from Signoret's language rather than from Walsh's description, which he had not seen, that *Coccus harrisi* Walsh is identical with this *Di-*

aspis. He also, following Signoret and Comstock, thinks that *Aspidiotus circularis* Fitch may be this same insect. Concluding, he says that while *circularis* having priority might rightly hold, if the species be the same, and if not then *harrisi*, "yet as there is uncertainty about the former and the latter is inappropriate * * * it will be most convenient to maintain the name *Diaspis ostreæformis*." Relative to this, it is enough to say that Walsh's description and figure of "*Coccus* (?) *harrisi*" afterwards called *Aspidiotus harrisis*, exactly applies to *Chionaspis furfurus*, and, as already indicated, the *circularis* of Fitch, is with little doubt *Aspidiotus ancylus*, or at least could not be referred to this *Diaspis*.

We find this *Diaspis* newly described by Del Guercio in 1894 (Il Naturalista Ciciliano, p. 142) as *Aspidiotus pyricola*, sp. nov., from specimens found on pear at Florence, Italy. The status of *pyricola* was first indicated by Saccardo* and has been confirmed by a careful examination made by the writer.

The old confusions, however, did not entirely disappear, as indicated by articles by Saccardo,* and Berlese and Leonardi,† and an anonymous author,‡ in which the various errors made by Signoret are adhered to relative to the species described by Curtis and Fitch.

Cockerell in his discussion of this species (Bull. 6, Tech. Ser., Div. Ent., U. S. D. A., 1897, p. 4, fig. 1) adopts Del Guercio's name *pyricola* for this *Diaspis* on the ground that both Signoret's and Boisduval's names are based on misidentifications with older descriptions.

The extended and voluminous literature of this *Diaspis* is concluded with an assignment of a new name for it by Dr. Horvath,‖ who suggests for it the name *Diaspis fallax*, on the ground that Signoret in describing it believed it to be identical with the *Aspidiotus* described by Curtis.

It will be noted (1) that this *Diaspis* has been twice referred to in connection with descriptions and figures to older species with which it has no connection; (2) that several species with

* Rivista Pat. Veg. iv, p. 53, 1895.
† Rivista Pat. Veg. vii, p. 261, 1898.
‡ Anon. (Zeits. f. Pflan.), p. 80, 1893.
‖ Revue d'Entomologie, vol. 16, p. 95, 1897.

which it bears no relationship have been assigned to it as synonyms; (3) that though many times described and several times figured in literature, it was first characterized as a new species in 1894 in entire ignorance of the older literature; and (4) that it was later again renamed in an effort to straighten out the difficulties of nomenclature which surrounded it in ignorance of the new name just referred to.

So far as the status of the names asssigned at various times to this insect are concerned, *pyri* of Boisduval, and *ostreæformis* of Signoret, are on exactly the same basis except in point of priority; in other words, both are based on misidentifications. In about the same category are the names *circularis* and *furfurus* of Fitch, and *harrisi* of Walsh, all being erroneous references. Of the new names assigned to it, *pyricola* of Del Guercio has priority over *fallax* of Horvath. It therefore merely becomes a question between *pyri*, Boisduval, and *pyricola*, Del Guercio. Either we must accept Boisduval's species as valid on the ground that he was the first to name and describe the insect, or throw it out for the technical reason that the name was based on an error, and substitute Del Guercio's name. The writer's preference would be to accept the name given by Boisduval, which, while based on a misidentification, is new to the genus *Diaspis*, unfortunately for this view, however, it conflicts with the rule of zoological nomenclature which rejects any "specific name which undoubtedly rests upon an error of identification." If this rule be followed, this insect must be known as *Diaspis pyricola* (Del Guercio) Saccardo, 1895.

As to the occurrence of this *Diaspis* in the United States, the records so far show it only from California, although it very likely occurs elsewhere on the Pacific slope and possibly east of the Rocky Mountains. As noted above, it was reported from California by Comstock in 1883 from specimens on pear sent by Matthew Cook from Sacramento. Cockerell has also reported receiving it on *Prunus* from California, and we have had it within the last year on dried California prunes sent to us by Dr. L. Reh, Hamburg, Germany.

A leaflet entitled "The Pacific Tree and Vine," printed at San José, Cal., January 13, 1900, reports the occurrence about

San José of *Diaspis pyricola*, styled the "Italian pear scale," which proves from specimens on French prune sent at our request by Mr. E. M. Ehrhorn, January 24, 1900, and exhibited herewith, to be the species under discussion.

When in California last Fall (1899) Dr. Howard noted infestation by what proves to be this scale insect on a pear tree in the city of San José. Writing under date of January 24, 1900, Mr. Ehrhorn says this scale insect has been in San José since 1889, and is spreading a little though being vigorously fought. He says it has a habit of getting under moss on the trees, which makes it more difficult to control.

This *Diaspis* is still another illustration of a mischievous scale insect which has come to us from Europe on imported stock. The published records show it to occur very commonly on pear in Germany, France, Italy and Portugal; and in Italy also on "apple, peach, etc." In the Department collection, it is represented from Germany and France on pear, and from Italy on apple.

A New Eriococcus, With Remarks on Other Species.

By T. D. A. COCKERELL, N. M. Agr. Exp. Sta.

Eriococcus quercus toumeyi, subsp. nov.

♀.—Sac quite ordinary, closely felted, white, about 4 mm. long. Eggs pale green; the insect hibernates in the egg stage. ♀. On boiling in liquor potassæ, turns the liquid pale pink. Antennæ 7-jointed, joints measuring in micomillimeters: (1.) ? (2.) 33, (3.) 51, (4.) 36, (5.) 24, (6.) 18, (7.) 30. Formula 342756 agreeing with that of *E. quercus* and *dubius*. Femur with trochanter 228, tibia 150, tarsus 120, claw, 33, width of femur 69 u. Dermal spines very large, the largest 65 u long.

Hab.—On twigs of *Prosopis velutina*, close to the University of Tucson, Arizona, collected by Prof. Toumey and the present writer, Nov. 1899. It is quite scarce, being greatly reduced by a dipterous parasite, doubtless *Leucopis*.

The North American species of *Ericoccus* (if we include an unpublished one found by Mr. Parrott on grass in Kansas) are 14 in number, two of them (*aravcariæ* and *coccineus*) being introductions from abroad. Of these *E. neglectus* is known by its waxy sac; *E. arenosus* by its sandy sac, although individu-

als may yet be found without this peculiarity; and *E. azaleæ* by the sac being covered with protruding filaments, and also by the reddish-purple eggs, the usual color of the eggs in the genus being pale yellow. The remaining species have closely-felted sacs, very much alike, so that they can hardly be determined from external characters.

On microscopical examination *E. quercus* stands out prominently from all the others by reason of its very long tibia, which is conspicuously longer than the tarsus. The insect named *toumeyi* agrees herein with *quercus*, but differs in its longer tarsus, and the generally smaller antennæ. The measurements of the antennal and segments of *toumeyi* fall completely within the range of variation of *tinsleyi*, but the legs and spines are not at all as in that species.

The normal number of antennal joints in North American *Eriococcus* is seven, though *neglectus* and *palmeri* have only six, while *borealis* varies from 7 to 8. In *E. aravcariæ*, *adenostomæ* and *dubius* the tibia and tarsus are subequal in length; but in *gillettei*, *tinsleyi*, *azaleæ*, *coccineus* and *borealis* the tarsus is distinctly longer than the tibia. These characters of the legs and antennæ are useful but not always conclusive, owing sometimes to their variability and sometimes to the fact that they are virtually identical in really different species, as *tinsleyi* and *larreæ*, which differ greatly in the spines.

From South America only one *Eriococcus* has been received, viz. *E. brasiliensis*, Ckll. ined., found by Messrs. Hempel and Von Ihering at Yprianga, Brazil, on *Baccharis*. It has 7-jointed antennæ; formula 37 (24) 56 to 3 (72) (45) 6; ♀ sacs cream color, 2½-3 mm. long, closely felted.

Kuhlgatz, in the Monatsschrift für Kakteenkunde, Jahrg., viii, p. 166 (1808), has described a *Rhizococcus multispinosus*, found on *Opuntia vestita*, a South American species of cactus. This creature is manifestly an *Eriococcus*, and its name is unfortunately similar to that of *E. multispinus*, Maskell. However, by its reddish color, 7-jointed antennæ and proportion of joints, and habitat on cacti, it resembles *E. coccineus*, of which it is quite possibly a synonym.

NOTE.—I will take this opportunity to raise the question

whether *Pulvinaria phaiæ*, Lull, ENT. NEWS, Oct., 1899, p. 237, is not identical with *P. brassiæ*, Ckll., *Can. Ent.*, 1895, p. 135, found in the orchid *Brassia*. The slight difference apparent in the antennæ is hardly likely to be of specific value. It is further possible, to say the least, that both insects may be identical with *P. floccifera*, Westwood, as interpreted by Green in *Ent. Mo. Mag.*, 1897, p. 73.

A New Species of Myrmeleon from Texas.

By NATHAN BANKS.

Recently Mr. McClendon sent me for determination some Myrmeleonidæ from Texas, among which is a new species of the genus *Myrmeleon*, as restricted. Doubtless there are several species in this genus yet to be separated out from the common *M. rusticum* Hag. This form, however, is very distinct by several points of coloration, so that there is no chance of its being confused with *M. rusticum*, which is in the same region.

Myrmeleon texanum n. sp.

Head yellowish, with a large, shining black spot in front, reaching from the antennæ to the clypeus, vertex more reddish, unspotted; pronotum pale yellowish, with a broad central brown stripe, broadest behind, and in front of the furrow much narrowed and divided by a pale line; meso and metathorax dull yellow-brown, not distinctly marked, but with a broad yellow stripe each side through the bases of the wings; thorax clothed with white hair; abdomen dark brown; legs pale, somewhat reddish, without dark stripes, with black bristles and reddish spurs. Wings hyaline, the extreme bases somewhat flavescent; venation yellowish, without dark interruptions; above eight cross-veins before the origin of the radial sector, two cross-veins connecting the cubital fork to the anal vein; pterostigma rather whitish, not distinct; tips of wings acute, and the hind margin near tip is slightly sinuate.

Length 30 mm.; expanse 54 mm.

Galveston, Texas, June, 1900. Readily known from the other species by its wholly pale legs, pale promotum, markings of head, and pale, uninterrupted venation of wings.

Muggins—"Animal training has gotten down to a pretty fine point when we hear of educated fleas." Buggins—"Why, years ago, when I was a boy, we used to have spelling bees."

Recollections of Old Collecting Grounds.

By H. F. WICKHAM, Iowa City, Iowa.

X.—Breckenridge and Peak Eight.

From Leadville we started back to Denver, over the South Park Line, which climbs out of the Upper Arkansas Valley through Fremont Pass, at an altitude of above 11,000 feet, after which the descent towards Breckenridge. The ride was wonderfully beautiful. As the train started in the morning the view was unobscured by clouds, and we enjoyed to the full the sight of the great mountain ranges towering on either side. All along the line are little mining towns, some of them seemingly prosperous, others desolate and almost abandoned, with groups of tenantless houses about great empty mills, representing thousands of dollars of wasted capital. The course of Ten Mile River is paralleled quite closely until the Valley of the Palne is entered and followed to Breckenridge, a rather small but thriving town in the midst of a famous gold-producing district.

It is impossible to see out of the Blue River Valley at this point, surrounded as it is by colossal mountain ranges. On one side of the town lies the Ten Mile range, the peaks of which are designated by number instead of by name. Another side is guarded by Mount Hamilton, or "Baldy," as it is locally called, while farther up the stream looms the vast body of Silver Heels. The elevation of the station is about 9500 feet, but the trails are good in the adjacent ranges, and it is not difficult to reach, on foot and without undue exertion, heights of 14,000 feet or more. The pine forests come quite down to the railroad tracks, and, though largely burnt by more or less recent fires, add much to the appearance of the scene. Afternoon rains were of daily occurrence during our stay, in the middle of July.

The Coleoptera indicate essentially a forest fauna. There is not that element of plains species which is so strong at Buena Vista, and which makes itself evident even at Leadville. Thus we found Eleodes abundantly at the former place, and less commonly at the latter, while at Breckenridge none were seen. This is probably due in great part to the configuration of the country,

and perhaps, in a measure, to its forest-clad condition, for, generally speaking, the species of Eleodes are not fond of the woods.

In the neighborhood of town we got *Cicindela laurenti*, but only rarely. *Carabus oregonensis* was not uncommon under logs with *Pterostichus protractus*, *longulus* and *luczotii*. *Notiophilus hardyi* was found under stones in rather dry situations. *Trachypachys inermis* we detected under sticks which were lying on beds of moss. *Bembidium* was represented by *bimaculatum*, *fusicrum*, *grapii*, *versicolor* and *dyschirinum*. Of these *grapii* and *dyschirinum* were found on the margins of cold mountain brooks, while the others were running about the banks of a small pond. *Trechus chalybæus* was very abundant under boards which were well soaked through from lying in damp places; the little beetle has quite a strong, disagreeable odor, which it exhales when disturbed, agreeing in this respect with many other Carabidæ. *Calathus ingratus*, *Cymindis unicolor*, *Harpalus fallax*, *H. innocuus* and *H. oblitus* were more or less common in the valley.

Peltis ferruginea and *Calitys scabra* were taken occasionally from the under sides of logs, especially when these were infested by woody fungi. *Elater apicatus* was met with once and *Athous simplex* was also taken rarely. *Melanophila longipes* was seen on a lumber pile in town, with an occasional *Pachyta liturata*. *Podabrus lateralis* was not uncommon. It is curious what a deceptive resemblance this insect, when at rest, bears to the Elaterid *Campylus denticornis*, for which I have two or three times mistaken it at first sight, though I never took the latter species in the Rocky Mountains. *Dasytes hudsonicus* occurred, as usual, in beatings from the evergreens.

Flowers were by no means unproductive. One *Acmæops atra* was taken on blossoms, while *A. pratensis* was quite plentiful and *A. proteus* less so. *Leptura nigrolineata* and *L. chrysocoma* were also captured in this way, the latter extending its range nearly up to timber-line on the mountains.

Chrysomelidæ were not obtrusive. *Zeugophora abnormis* again occurred on leaves of aspen and *Adoxus obscurus* was met with on various plants. *Entomoscelis adonidis* was seen only occasionally. *Œdionychis lugens* was found under logs in the

lower woods, *Adimonia externa* sometimes accompanying it. A batch of *Plagiodera oviformis* was noted feeding on low herbs on the bank of a small pond.

Of weevils we saw very few. *Rhynchites bicolor* was present on wild roses. The genus *Trichalophus* was represented by two species, *didymus* (one specimen) and *alternatus* (more common). These fine weevils are almost exclusively found under logs which lie in patches of a small woody trailing plant, having small, smooth, rather light green leaves. I do not recollect having found any living specimen of these species in mountain regions unassociated with this plant. They ranged from the valley almost to the timber-line.

Exploration of the higher elevations was greatly hindered by the ruins. Nevertheless I made the ascent of Peak Eight (in the Ten Mile Range) once, and attempted it again, but, being caught in a heavy fog, had to give it up through fear of losing the way. Just above timber-line *Acmæops pratensis* was very abundant on flowers. Higher up, near the summit of the mountain, probably between 13,000 and 14,000 feet, I took *Trechus chalybens*, *Amara brunnipennis* (which gives off a vile odor when handled), a very few *Bembidium grapii*, one *Harmonia picta*, one *Podabnes lateralis*, a few *Aphodius vittatus* and an *Ægialia*, which seems to be a small form of *lacustris*. A number of elytra of *Carabus oregonensis* were picked up, but whether these remains indicate a natural habitation of the species or were simply scraps left by birds I dare not say. The peak is much more difficult of ascent than Moose Mountain because of the greater width of the fringing zone of flat-topped, shrub-like evergreens that lie just above the timber-line proper. It is not a pleasant task forcing one's way through such a thicket when everything is dripping wet, and so far my explorations on mountain peaks had not been productive of any goods results entomologically.

We found Breckenridge the least productive of any locality which we had visited on this trip, owing, no doubt, to the fact that very little variety of landscape could be visited, and then, too, the season was approaching the "resting stage" that seems so noticeable every summer. The scenery, however,

was pleasing indeed, and, given good weather, this ought to make a favorable point from which to attempt a more careful examination of the high mountain summits—a piece of entomological investigation much to be desired.

Some Strange Habits.

By O. W. BARRETT, Tacubaya, D. F., Mexico.
Museum of the Geographical Exploration Commission.

I believe it is true that every species of insect has, at some stage in its life, some habit or instinct which would astonish us if we could only appreciate it.

Arachnis dilecta Bdv., as imago, protects itself with a strong odor, as penetrating and more lasting, though not so disagreeable as that of the worst-smelling Coreidæ. Having noticed that the odor clung to my fingers for a remarkably long time, I concluded that some liquid excretion was the cause, but was surprised to finally see and feel a jet which issued, apparently, from the top of the prothorax. This "liquid odor" [sic] is clear, thin, almost tasteless, and very volatile. The effluvium may be detected, however, a week or more after the death of the specimen. Both sexes are endowed alike.

Pericopis salvini Feld. when "at bay" expels from the sides of the thorax a bright green liquid of peculiar smell; the expulsion of the liquid is accompanied by a froth-producing crepitation or quasi stridulation, after the manner of *Tæniopoda spp.*

When captured the sluggish *Phægoptera ochraceator* Walk. defends itself with an acrid, odorless, limpid liquid, which is exuded in small drops apparently from several points on the thorax.

Bungalotis (*Thymele*) *midas* Cr., the royal Hesperid with the purple patch, seems to prefer the shade. The living specimens I have seen were in the virgin forest and showed no compunction in breaking the family by-laws by darting into the darkest thickets when alarmed.

The flocking habit of *Hymenitis oto* Hew. and *H. nero* Hew. is undoubtedly for the purpose of selecting mates.

Usually from ten to twenty individuals gather in some secluded nook, most of them resting on or near the ground; some of the members (presumably ♀ ♀) remain motionless, while others make flights of a few feet in view of the assembly or display their skill at hovering. Pairs *in copula* are generally to be found near by. The assemblage lasts several hours and is reformed if broken up. Have noted a tendency to this habit in *Ithomia leila* Hew., but never in any other Ithomiina. *Leptalis* (*Dismorphia*) *fortunata* Luc. is frequently a hanger-on [sacerdotal functionary?] at these *Hymenitis* gatherings.

I understand the early stages of *Mecistogaster* and *Megaloprepus* are still unknown. Have taken fresh specimens of species belonging to these genera several miles away from any stream and in the heart of the forest. Their flight is necessarily very slow and sustained for only a few yards at most. They spend their time clinging to some vine or branch near the ground, the long abdomen hanging vertically. Now, is it possible that the early stages are passed in the large water-retaining leaf-bases of Bromeliads? Surely the young aristocrat would find plenty of food (mosquitoes) in such a home, but *the Bromeliads roost high*. And I would hesitate to impute that merely damp mold might be the habitat of such a magnificent member of the Odonata as *Megaloprepus coerulescens*.

ERRATUM.—ENT. NEWS, October, p. 556—line 10 from bottom, for *Bigelovia gracilens* read *Bigelovia graveolens*.

DORYTOMUS BREVISETOSUS.—Last spring Prof. E. O. Wooton brought me some beetle larvæ which he found at Mesilla Park, N. M., on the flowers of *Populus wislizenii* (Wats.) Sarg. The larvæ were quite variable; dorsally red, or with two red bands, or wholly pale yellowish. For the identification of the species I am indebted to Mr. Schwarz. The breeding habits of these species of *Dorytomus* (*mucidus*, *lacticollis* and *brevicollis*) have already been recorded (Jn. N. Y. Ent. Soc., Vol. I, p. 41), and all feed on *Populus* or *Salix*.—T. D. A. COCKERELL.

PSOCIDS AT LIGHT.—There appears to be no reference to Psocidæ taken at light. Most Psocidæ do not fly readily in the daytime, even when disturbed. However, their wings must be of some use, and doubtless it will be found that nearly all of our forms fly at night or early evening. The past summer I have taken four species at light, as follows:
Psocus virginianus, several.
Psocus purus, two.
Psocus sparsus, several.
Pterodela pedicularia. several.—NATHAN BANKS.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

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PHILADELPHIA, PA., NOVEMBER, 1900.

"IT seems to be utterly forgotten that the species is in some degree a natural entity, whilst the genus is much more a matter of opinion and convenience, not to say caprice. It is a label of classification, whilst the specific name distinguishes an actual separate thing."—T. A. Chapman, M. D.

Are genera labels of classification, matters of opinion, matters of caprice, or emanations of the "*mihi itch*"? We fear that their utility is being lost sight of, and that caprice, or the "*mihi itch*," is having much to do with their formation. It looks as though we are rapidly approaching the time when we will have a genus for every species, and then we may conveniently abolish the binomial nomenclature. If this comes to pass what will the "*mihi itch*" fellows do? Oh! horror of horrors! perhaps entomologists will lose their heads, like some of the bird and mammal men, and give us infinite divisions of species and varieties. Just imagine an entomologist sitting on a high stool in the Department of Agriculture and trying to compete with the mammalogists in grinding out binomials and quadrinomials and describing individuals from some one's fence corner. An experience of many years has shown that a multiplicity of genera is only confusing to the student and beginner, and they fight shy of works thus burdened. The condition of affairs in regard to genera was tersely put in a recent publica-

tion, and reads as follows: "For in this (use of genera) almost everyone has his own various, original, adopted, or modified views; generic division being merely artificial, only a matter of convenience for grouping, not abiding, continually liable to be changed, and continually being changed, consequently not only of minor importance, but, when carried to extremes, a great evil, a hindrance to the student, an actual bar to the beginner. It is only by the specific name that we know the insect; with this knowledge the rest is attainable."—Herman Strecker.

There are no fixed lines as to genera, but there is reason and common sense and utility, and these should not be lost in the abyss of caprice or conceit.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

1. Proceedings of the Academy of Natural Sciences of Philadelphia, 1900. pt. ii, Oct.—**4.** The Canadian Entomologist, London, Ont., Oct., '00.—**5.** Psyche, Cambridge, Mass., Oct., '00.—**6.** Journal of the New York Entomological Society, Sept., '00.—**8.** The Entomologist's Monthly Magazine, London, '00.—**9.** The Entomologist, London, '00.—**11.** The Annals and Magazine of Natural History, London, Sept., '00.—**21.** The Entomologist's Record, London, Sept. 15, '00.—**22.** Zoologischer Anzeiger, Leipsic, '00.—**35.** Annales, Société Entomologique de Belgique, xliv, Brussels, '00.—**46.** Tijdschrift voor Entomologie, xliii, 1-2, The Hague, Sept. 5, '00.—**55.** Le Naturaliste, Paris, '00.—**68.** Science, New York, '00.—**87.** Revue Scientifique, Paris, '00.—**100.** Verhandlungen, Deutschen Zoologischen Gesellschaft, 1900, Leipsic.—**101.** Rovartani Lapok, Budapest, '00.—**107.** Revista do Museu Paulista, iv, San Paulo, Brazil, '00.—**119.** Archiv für Naturgeschichte, lxvi, i, 3, Berlin, July, '00.—**134.** Arbeiten aus der Biologischen Abtheilung für Land-und Forstwirthschaft am Kaiserlichen Gesundheitsamte, i, 2, Berlin, '00.—**136.**

Stettiner Entomologische Zeitung, lxi, 1-6, '00.—**137.** Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott's) xvii, 1-2, Giessen, '00.—**138.** Rendiconto, R. Accademia delle Scienze dell 'Istituto di Bologna, n. s. Rec'd Oct. 12, '00.

THE GENERAL SUBJECT.—Andrews, C. W. A Monograph of Christmas Island (Indian Ocean): Physical Features and Geology. With descriptions of the Fauna and Flora by numerous contributors. Printed by order of the Trustees of the British Museum (Natural History). London. 1900. 337 pp., 9 text figs., 22 pls., 1 map.—**Banks, N.** A list of works on North American Entomology, Bulletin 24, new series, U. S. Dep't. of Agriculture, Division of Entomology. Washington, '00.—**v. Chernel, S.** Insects and birds [in Magyar], **101,** April, May.—**Laloy, L.** Natural history and ethnography at the Universal Exposition, **55,** Sept 1.—**Mayer, P.** [Summary of researches on Arthropoda exclusive of Crustacea in 1899] Zoologischer Jahresbericht für 1899. Herausgegeben von der Zoologischen Station zu Neapel, Berlin, 1900.—**Snellen, P. C. T.** In remembrance of F. M. Van der Wulp [in Dutch], **46.**—**Wiesner, J.** Die Rohstoffe des Pflanzenreiches. Versuch einer technischen Rohstofflehre des Pflanzenreiches. Zweite gänzlich umgearbeitete und erweiterte Auflage. 5. Lieferung. Leipzig, Engelmann, 1900. [Abschnitt xv, pp. 674-699 on galls].—**v. Zittel, K. A.,** and **Scudder, S. H.** Arachnida, Myriopoda and Insecta in: Text-book of Paleontology by Karl A. von Zittel, translated and edited by Charles R. Eastman. Vol. i, pt. ii. London and New York, Macmillan & Co., 1900.

ECONOMIC ENTOMOLOGY.—d' Ajutolo, G. New cases of *Argas reflexus* parsitic on man, **138,** ii, No. 4. 1898.—**Anon.** Insect and fungous foes of the farmer and gardener [The small Ermine Moths—*Hyponomeuta*], Gardener's Chronicle, London, Sept. 15, '00.—**Anon.** A new black scale destroyer; A new [grasshopper] parasite for California, Agricultural Journal, Cape Town, Aug. 16, '00.—**Bancroft, T. L.** On the metamorphosis of the young form of *Filaria Bancrofti* Cobb [*F sanguinis hominis* Lewis, *F. nocturna* Manson], in the body of *Culex ciliaris* L. the "house mosquito" of Australia, figs. Journal and Proceedings, Royal Society of New South Wales, xxxiii, Sydney, 1900.—**Bastianelli, G.,** and **Bignami, A.** On the development of the parasites of tertiana in *Anopheles claviger*, 1 pl., **137** —**Cockerell, T. D. A.** The Kieffer pear and the San José scale, **68,** Sep. 28.—**Dionisi, A.** On the biology of the malaria parasites, **137.**—**Dohrn, H.** On injurious insects and an expert judgment, **136.**—**Fermi, C.,** and **Lumbao, S.** Freeing a city from mosquitos; Contribution to the prophylaxis of malaria: attempts to protect mankind by chemical means against mosquitos, Centralblatt für Bakteriologie, Jena, Aug. 22, '00.—**Frank.** Damage to winter wheat by the wheat-blossom-fly (*Hylemyia coarctata* Fall.) **134.**—**Grassi, B., Bignami, A.,** and **Bastianelli, G.** Researches on malaria during the month of January, 1899, **137;** On the developmental cycle of the crescents ("Halbmonde") in *Anopheles claviger* and other studies on

malaria during the months October to May, 1899, 2 pls., **137.—Grassi, B., and Noè, G.** Propagation of filaria of the blood exclusively by means of the puncture of special mosquitos, Rendiconti, Accademia dei Lincei, Classe di scienze fisiche, matematiche e naturali, Roma, Sept. 2, '00.—**Hopkins, A. D.** The Hessian fly in West Virginia and how to prevent losses from its ravages, figs., Bulletin 67, West Virginia University Agric. Exper. Station, Morgantown, W. Va., Aug., '00.—**Malocchi, D.** *Demodex folliculorum* in some rare cutaneous affections and especially the finding of the same in the follicles of the eyebrows and whiskers, **138,** iii, 3, '99.—**Marshall, G. A. K.** Mosquitos and malaria, **9,** Aug.—**Pommerol, F.** A small Hemipter [*Reduvius malinellus*] destroyer of the larvæ of the *Yponomeuta* of the apple tree, **87,** Sept. 15.—**Rogers, L.** The relationship of drinking water, water-logging and the distribution of Anopheles mosquitos respectively to the prevalence of Malaria north of Calcutta. Proceedings, Asiatic Society of Bengal, July, 1900. Calcutta, Aug. 2.—**Rörig.** A new experiment in combating the schwamm spinner [*Ocneria dispar*], figs., **134.—Wilcox, E. V.** Abstracts of recent papers, Experiment Station Record xi, 11, xii, 1, 2. U. S. Dep't. Agriculture, Washington, '00

ARACHNIDA.—Banks, N. New genera and species of American Phalangida*, **6.—Laurie, M.** On a Silurian Scorpion and some additional Eurypterid remains from the Pentland Hills, 5 pls., Transactions, Royal Society of Edinburgh, xxxix, pt. iii, 1900. Published separately Feb. 1, 1899.—**Oudemans, A. C.** Remarks on the denomination of the genera and higher groups in "Das Thierreich, Oribatidæ," **46.—Sargent, A. B.** Preliminary notes on the rate of growth and on the development of instincts in spiders, 2 pls., **1.—Thon, P. C. K.** On the copulatory organs of the Hydrachnid genus *Arrhenurus* Dugès, figs., **100.**

PROTOTRACHEATA.—Bouvier, E. L. New observations on the Peripatus of the collection of the British Museum. Quarterly Journal of Microscopical Science (n. s.), xliii, 4. London, Sept., '00.—**Dendy, A.** Preliminary note on a proposed new genus of Onychophora, **22,** Sept. 17.

MYRIOPODA.—Attems, C. On the coloration of *Glomeris* and description of new or little known palæarctic Myriopods, 2 pls., **119.—Cook, O. F.** Camphor secreted by an animal (*Polyzonium*), **68,** Oct. 5.—**Verhoeff, C. W.** Contributions to knowledge of palæarctic Myriopods: xiii. On the comparative morphology, phylogeny and classification of the groups and species of the Ascopermophora, 4 pls. xiv. On the Glomeridæ, **119;** Wandering diplopods checking railroad trains, **22,** Sept. 3; On *Schendyla* and *Pectiunguis,* **22,** Sept. 17.

ORTHOPTERA.—Scudder, S. H. The distribution of *Leptysma marginicollis* Serv., **5;** [Additions to the list of] New England Orthoptera, **5;** *Mantis religiosa* in America, **5.—Wheeler, W. M.** The habits of *Myrmecophila nebrascensis* Bruner, fig., **5.**

NEUROPTERA.—East, A. Notes on the respiration of the dragonfly nymph, **9,** Aug.; Some additional notes on *Æschna cyanea* [physiolo-

gical], **9,** Oct.—**Lancaster, A.,** and **McLachlan, R.** On migrations of *Libellula quadrimaculata* in Belgium in June, 1900, **8,** Oct.—**McLachlan, R.** The habitat of *Thaumatoneura inopinata*, [Panama], **8** Aug.

HEMIPTERA.—Cholodkovsky, N. On the male sexual apparatus of *Chermes*, fig., Biologisches Centralblatt, Erlangen, Sept. 15, '00. —**Cockerell, T. D. A.** Notes on Brazilian Coccidæ [in Portugese], **107.—Ehrhorn, E. M.** New Coccidæ from California*, figs., **4.**—**Green, E. E.** Note on the attractive properties of certain larval Hemiptera, fig., **8,** Aug.—**Hempel, A.** The Brazilian Coccidæ [in Portugese], 8 pls., **107.—Hunter, S. J.** Coccidæ of Kansas, iii*, 7 pls. Kansas University Quarterly, ix, 2, Lawrence, Kans., April, '00. Rec'd. Sept. 17.—**King, G. B.** Miscellaneous notes on Coccidæ from western Massachusetts, **5.**—**Kirkaldy, G. W.** On the nomenclature of the genera of the Rhynchota, Heteroptera and Auchenorrhynchous Homoptera, **9,** Oct.—**Reh, L.** On the formation of the shield and the moulting of *Aspidiotus perniciosus* Comst. (preliminary communication), **22,** Sept. 17.

COLEOPTERA.—Aurivillius, C. List of the Cerambycidæ collected by Dr. F. Meinert in Venezuela in 1891. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar, lvii, 4, Stockholm, April 11, '00.—**Bordas, L.** Researches on the male reproductive organs of Coleoptera (comparative anatomy, histology, fertilizing material), 11 pls. Annales des Sciences Naturelles, Zoologie (8), xi, 2–6. Paris, Aug., '00.—**Champion, G. C.** Supplementary note on the distribution of *Anchomenus quadripunctatus*, **8,** Oct.—**Fenyes, B.** From the diary of a Californian Coleopterologist, i [in Magyar], **101,** April.—**Kempers, K. J. W.** The venation-system of the Coleopterous wing (cont.) [in Dutch], 3 pls., **46.—Kerremans, C.** New Buprestidæ and synonymic remarks*, **35,** 8, Sept. 15.—**Lameere, A.** Notes for the classification of Coleoptera, **35.—Lewis, G.** On new species of Histeridæ and notices of others, 1 pl., figs., **11.—Lohde, R.** Catalogue of the Cleridæ [of the world], **136.—Ohaus, F.** Report on an entomological journey to Central Brazil (cont.), **136.—Pic, M.** Description of Coleoptera: two new *Ptinus* from Brazil, **55,** Sept. 15 —**Tower, W. L.** The Colorado potato beetle, **68,** Sept. 21.

DIPTERA.—Aldrich, J. M. A question of nomenclature [*Gastrophilus epilepsalis*], **4** —**Doane, R. W.** New North American Tipulidæ*, 2 pls., **6** —**Escherich, K.** On the formation of germ layers in the Muscidæ, **100.—Hendel, F.** Researches on the European species of the genus *Tetanocera* in Schiner's sense. Verhandlungen, Zoologisch-botanischen Gesellschaft in Wien, l, 7, Aug. 24, '00.—**Ricardo, G.** Description of five new species of Pangoninæ from South America, **11.**

LEPIDOPTERA.—Beutenmüller, W. Synopsis of the food-habits of the larvæ of the Sesiidæ, **4.—Chapman, T. A.** A special structure in the larva of *Eriocampa limacina*, **8,** Oct.—**Dyar, H. G.** Notes on some North American species of Tineidæ*, **4;** Life-histories of

North American Geometridæ, xv, **5**; Notes on the larval-cases of Lacosomidæ (Perophoridæ) and life-history of *Lacosoma chiridota* Grt. 1 pl., **6**.—**Grote, A. R.** The principle which underlies the changes in the neuration, **4**; Types of Noctuid genera, **4**.—**Hampson, G. F.** Catalogue of the Arctiadæ (Nolinæ, Lithosianæ) in the collection of the British Museum. London. Printed by order of the Trustees. 1900. 589 pp., 411 text figs. and (separately bound) 18 col. pls. numbered xviii–xxxv. This is Vol. ii of the Catalogue of Lepidoptera Phalænæ and includes 1217 species.*—**Kunze, R. E.** Notes on ova and larva of *Hyperchiria pamina*, **6**.—**Merrifield, F.** Experiments on the color susceptibility of the pupating larva of *Aporia cratægi* and on the edibility of its pupa by birds, **8**, Aug.—**Peterson, W.** Contributions to the morphology of the Lepidoptera, 144 pp., figs., 4 pls. [Venation, nervous system, mouth-parts, digestive and tracheal systems, reproductive organs]. Memoires, Academie Imperiale des Sciences (8), ix, 6. St. Petersbourg, 1900.—**Piepers, M. C.** and **Snellen, P. C. T.** Enumeration of the Lepidoptera Heterocera collected in Java, 4 col. pls., **46**.—**Prout, L. B.** The types of the genera *Gortyna* and *Ochria*, **21**.—**Quail, A.** Diphyletism in the Lepidoptera, **9**, Aug.—**Reutti, C.** Review of the Lepidopterous fauna of the Grand-duchy of Baden and the adjoining countries. Revised and published after the author's death by A. Spuler. Verhandlungen, Naturwissenschaftlichen Vereins in Karlsruhe, xii, Berlin, 1898. Rec'd Sept 26, '00.—**Sharpe, E. M.** On a collection of butterflies from the Bahamas,* 1 col. pl., Proceedings, Zoological Society of London, 1900, ii, Aug. 1, '00 —**Smith, J. B.** New species of Floridian Noctuidæ,* **6**.—**Tutt, J. W.** Migration and dispersal of insects: Lepidoptera, **21**.—**Walsingham, Lord,** and **Durrant, J. H.** *Blastobasis segnella* Z., a European species wrongly included in the American lists, etc., **8**, Aug.—**Weeks, A. C.** Ovipositing of *Vanessa antiopa*, **6**.

HYMENOPTERA.—André, E. Mutillidæ (Vol. viii, pp. 65–144, pls. iv–vi), in: Species des Hymenopteres d'Europe et d'Algerie.....fondé par Edmond André ...continué sous....Ernest André. Paris, Vve. Dubosclard, 70e fascicule Apr. 1, 00.—**Ashmead, W. H.** Classification of the fossorial, predaceous and parasitic wasps, or the superfamily Vespoidea, 3, **4**.—**Cockerell, T. D. A.** On a small collection of bees from Juarez, Mexico, **9**, Aug.; The New Mexico bees of the genus *Cœlioxys*,* **4**; Descriptions of new bees collected by Mr. H. H. Smith in Brazil, i, **1**.—**Emery, C.** Additions and corrections to the essay toward a systematic catalogue of the genera *Camponotus, Polyrachis* and allies, **138**, ii, 4, 1898; Concerning the larvæ of some ants, **138**, iii, 4, '99.—**Hariot, P.** The myrmecophilous plants, fig. **55**, Sept. 15.—**Robertson, C.** *Nomada Sayi* and two related species,* **4** —**Titus, E. S. G.** Notes on Colorado bees,* **4**.—**Webster, F. M.** Sudden disappearance of the purslane sawfly *Schizocerus Zabriskei*, **4**.—**Yung, E.** How many ants are there in a nest?, **87**, Sept. 1.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held May 24th with nine persons present. Dr. D. M. Castle reported lack of success in collecting *Dichelonycha fusca* at Angora, Pa., this spring. Last year he found them in plenty, but this year took but one. Dr. Calvert stated that he was at Sea Isle City, N. J., last week and saw but few insects around the fresh-water ponds and no *Odonata*. Mr. Carl Ilg was duly elected an Asssociate of the Section.

HENRY SKINNER, *Recorder.*

The October meeting of the Newark Entomological Society was called to order by President Kemp, eight members being present. Having had no meeting since April, on account of the members being busily engaged in collecting, there was considerable business transacted.

Mr. Stortz reported the capture of *Erebus odora* in Newark on September 26th, and Mr. Schleckson the same on September 4th.

President Kemp left in May for a collecting trip through Tennessee and Kentucky. He returned in August and shortly after went to South Jersey on another trip. He has a large number of *Catocala* on hand.

After a sociable chat about his trip and other things of interest to the members the meeting adjourned.

WM. H. BROADWELL, *Secretary.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held September 27th. Mr. Laurent, Director, presiding. Fourteen persons were present. Mr. Laurent donated a handsome specimen of the nest of *Vesper maculata*, found at Mt. Holly, N. J. He stated that he had visited Da Costa, N. J., during July in search of *Neonympha areolatus*, but the swamp in which he had previously taken them in some abundance was dried up and none were seen. Mr. Laurent said *Ceratomia catalpæ* was spreading. He reported them from a number of places near the city, notably

Germantown. Mr. Hornig had found the larvæ at Washington Park, Camden Co., N. J. Mr. Laurent suggested that the species may winter as egg as well as larva. D. Skinner exhibited some Coleopterous larvæ, sent to him by Mr. Edward Potts. They have the peculiar habit of crawling quite rapidly on their backs. They were identified by Prof. Smith as *Allorhina nitida*. Mr. C. W. Johnson exhibited some flies he had found on the decayed berries of a vine at the grounds of the Biological School of the University of Pennsylvania. He also found one on decayed grapes at Riverton, N. J. Mr. Coquillette determined it to be *Chrysomyza demandata* Fabr., a European species. Mr. Johnson did not know of any previous record for American specimens. Dr. Calvert gave an account of the classification of some of the *Odonata*.

HENRY SKINNER, *Secretary*.

The ninth regular meeting of the Harris Club was held at 35 Court St., Boston, on Friday evening, September 21, 1900. Mr. W. L. W. Field gave a brief talk on the quantitative study of variation in insects. Mr. A. P. Hall exhibited a specimen of the occasional red suffused form of *Attacus cecropia*, and also a specimen of *Actias luna*, whose wings bore fast-fading shadowy transverse lines, similar to the lines upon the wings of *A. selene*. A photograph taken when the specimen was fresh showed that the lines had been much more distinct at that time. A like specimen, taken in Guilford, Conn., in 1894, by Mr. Field, has altogether lost the transverse lines in the space of six years, and now has the aspect of a perfectly normal *luna*.

Mr. Field reported the existence of what appears to be a thriving colony of *Enodia portlandia* in the Cold River Valley of southwestern New Hampshire. This butterfly is rare in most parts of New England.

Mr. Newcomb brought forward several exhibits, comprising a series of *Chrysophanus hypophlæas* showing variation through a wide range of patterns; an albino *Phyciodes tharos*, in which the ground color is white instead of tawny; a deep gray female of *Leucarctia acræa*, resembling the aberrant male form of the same species quoted by Harris; and lastly some cocoons, pupæ

and imagines of the interesting Mexican Hesperid *Doberes mexicanus*, whose cocoon is known as "campanita" (little bell), because of its pendulous nature and the remarkable vibratory activity of the pupa. An account of this species was given by Mr. O. W. Barrett in the Canadian Entomologist for August, 1900.

Mr. H. K. Burrison told an entertaining story of a vacation trip to the Yellowstone, in the course of which some collecting was done.

Mr. W. F. Low reported the capture of two specimens of *Erebus odora* in Jamaica Plain, July 16th and 30th last; both were males. Mr. Newcomb mentioned the finding of *Hepialus argenteomaculatus*, female, at Old Orchard, Maine; the specimen is unusually large, expanding 4.5 inches. Mr. R. W. Denton showed a living larva of *Attacus atlas*.

W. L. W. FIELD, *Secretary*.

A meeting of the American Entomological Society was held June 28th. Dr. P. P. Calvert, President, in the chair. Thirteen persons were present. Mr. Charles Drury, through Mr. Charles Liebeck, presented four specimens of *Stenomimus pallidus*. Mr. C. W. Johnson exhibited specimens of the species of *Pyrgota* and said there were five valid species to which he had added a new species from Canada, for which he proposed the name *chagnoni*. Mr. Liebeck said Mr. Chagnon has found an interesting member of the family Dascyllidæ—*Microcara explanata*. He had also received *Stenocolus scutellaris*. These were not represented in Dr. Horn's collection. He also reported taking *Geopinus incrassatus* at the electric lights in the lower part of the city. It is an unusual species here. He had previously taken a few while gunning as they flew over a ditch where he was concealed. Dr. Calvert stated that Miss H. T. Higgins, a senior student of the four years' course in Biology at the University of Pennsylvania, had recently studied the gizzards of some 90 species of dragon-flies of the subfamily Calopteryginæ and Agrioninæ, from quite diverse parts of the world. The objects of the investigation were to ascertain what information on the classification and relationships of these in-

sects could be gleaned from the study of this organ, and also to learn the changes which it undergoes during the course of individual development. Some details of the results were given. A paper has been completed which, it is hoped, will be shortly published. Mr. W. R. Reinick was elected a member of the Society.

HENRY SKINNER, *Secretary*.

At the September meeting of the Feldman Collecting Social, held at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, fourteen persons were present.

Dr. Castle exhibited a specimen of *Cychrus viduus* taken at Hope, N. Y.

Mr. H. W. Wenzel referred to a forthcoming list by Mr. Leng on the Cicindelidæ of the Upper Pine Barrens of New Jersey, in which several rare species will be recorded, including *Cicindela rufiventris*, a species new to the State.

The occurrence of *Cicindela lepida* in Ocean County was dwelt on by Prof. Smith; and the habits and occurrence of *Cicindela unipuncta* were discussed by Messrs. Skinner, Wenzel and Boerner.

Prof. Smith exhibited a red katy-did, and remarked on the value of formalin for preserving the color of such specimens. He also showed specimens of *Epicauta vittata*, which had attempted to eat their way through a cork to escape from a bottle. Specimens of *E. marginata* similarly confined made no effort to escape. He also showed hickory twigs which had been severed by an *Agrilus* larva, the marks left by the larva being in the form of a spiral. A letter from a correspondent in Hunterton Co., N. J., on the destructive properties of the larva of the Catalpa sphinx was read. The species had not been before recorded from New Jersey.

Dr. Skinner stated he had received a specimen of this larva from Lisette, Pa. He believed its recent spread into the North is due to the many catalpa trees that had been cultivated in late years, owing to the belief that this tree is free from pests. He also referred to the use of formalin as a preservative, and stated that he believed the formalin might set the

colors, in which case he would advise that the specimen be transferred to alcohol because a low percentage solution of formalin is apt to deteriorate by evaporation.

Mr. Johnson said that formalin is being abandoned as a preservative by most museums, as specimens so preserved will disintegrate in a few years.

Prof. Smith referred to his use of oil of citronella to keep off mosquitoes. He had found it excellent for this purpose, and was surprised to see from the latest publication on the subject that it was apparently not recorded as a remedy for this purpose.

Dr. Skinner referred to the occurrence of the black fly *Simulium* in the Adirondacks. The fly was very annoying at dusk.

Mr. Johnson exhibited pine twigs infested by several species of insects. *Pentilia* sp. was found feeding on a scale *Chionaspis pinifolii* infesting pine needles; and the great damage caused by *Retinia frustrana* was remarked on. The galls of *Diplosis piniinops* was shown.

Dr. Skinner spoke of the scarcity of Pselaphidæ and other small beetles in the Adirondacks. He had sieved the contents of many ants' nests, but not a specimen of beetle was found. The time of collecting between August 5th and September 1st may have been the cause of the lack of specimens.

Mr. Wenzel said that these beetles are no doubt absent during certain periods of the summer.

Mr. Johnson reported the abundance of *Tetracha virginica* near Clifton, Delaware Co., Pa. Hundreds of specimens were taken from a well into which they had fallen during one night.

WILLIAM J. FOX, *Secretary.*

TURKEYS TO THE RESCUE.—Tennessee Planters find a new way to Destroy Grasshoppers. Several Tennessee planters have adopted a unique method of destroying the grasshoppers which have overrun plantations in Bolivar and Washington Counties and threatened to cut a figure in the cotton yield of the coming season. The old soapsuds remedy, the Osnaburg cloth remedy and the inoculation process have proved of little value in fighting the pest, and now the farmers have come to the conclusion to discard the artificial remedies and place turkeys in the cotton fields to eat the grasshoppers. The turkey gobbler has a ravenous appetite for the insect, and the planters are counting on him to solve the problem of the grasshopper's extermination and to save the cotton crop so far as these two counties are concerned.—*Newspaper.*